

## Specification

## Title of the Invention

Data Distribution Method, System, and Apparatus and  
Recording Medium Recording Program

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Background of the Invention

The present invention relates to a data distribution system for distributing data to users through a communication network and, more particularly,

10 to a data distribution system for distributing different data to users.

With the recent rapid spread of portable telephones, there have been a growing number of occasions when users perform data communications by 15 electronic mail in mobile environments. A great deal of attention has been paid to advertisement distribution services for distributing advertisement information to portable telephones and the like by electronic mail and Web pages. For example, conventional advertisement 20 distribution systems for distributing information to portable telephones are disclosed in Japanese Patent Laid-Open Nos. 2000-224658 and 2000-201228.

A conventional, general advertisement distribution system is comprised of an upload terminal, 25 distribution server, and portable terminal. The distribution server, upload terminal, and portable terminal are connected to each other through a

communication network such that they can  
transmit/receive data to/from each other. The upload  
terminal is installed in a sponsor's office or  
advertising agent or the like that operates on behalf of  
5 the sponsor and used to register advertisement data in  
advertisement distribution services. The distribution  
server is installed in an advertisement distribution  
center to distribute registered advertisement data to  
the portable terminal. The portable terminal is carried  
10 by the user to receive the advertisement data  
distributed from the distribution server and display it.

Fig. 11 shows the operation of a conventional,  
general advertisement distribution system. A sponsor  
creates advertisement data by itself or by requesting an  
15 advertising agent, uploads the advertisement data from  
an upload terminal to a distribution server, and  
registers it, in advance.

First of all, the user who receives  
advertisement distribution services uses the portable  
20 terminal to transmit user information about the user  
himself/herself and the portable terminal to the  
distribution server so as to perform user registration.  
After the user registration, questionnaire data is  
transmitted from the distribution server to the portable  
25 terminal. When the user answers the questionnaire with  
the portable terminal, the user information in a user  
information table stored in the distribution server is

updated.

A questionnaire to the user contains question items for designating user's preferences and the like, and the user's preferences and the like are registered  
5 as user information in the distribution server in accordance with the answer. Thereafter, the distribution server selects and distributes advertisement data that suits the user's preferences to the portable terminal of the user. When the user's  
10 preferences change, the user transmits information about the preferences from the portable terminal to the distribution server, thus updating the user information.

According to the conventional advertisement distribution system described above, to select  
15 advertisement data that suits the preferences of each user, each user must answer questionnaires and the like. In some cases, however, no answer can be obtained, and hence advertisements that suit the user's preferences cannot be distributed. In addition, in some cases,  
20 changes in user's preferences cannot be quickly grasped, and hence distributed advertisements differ from the user's preferences.

#### Summary of the Invention

It is an object of the present invention to  
25 provide a data distribution system which quickly and accurately grasps the preferences of users and distributes information in accordance with the

preferences.

In order to achieve the above object, according to the present invention, there is provided a data distribution method of distributing data selected 5 for each of a plurality of user terminals from a distribution center to each user terminal through a communication network, comprising the steps of notifying the distribution center of contents of user operation for the data distributed to the user terminal, causing 10 the distribution center to receive a notification from the user terminal, selecting data to be subsequently distributed to the user terminal by using the contents of the user operation contained in the notification from the user terminal, and distributing the selected data to 15 the user terminal.

Brief Description of the Drawings

Fig. 1 is a block diagram showing an advertisement distribution system according to an embodiment of the present invention;

20 Fig. 2 is a sequence chart showing the flow of services provided by the advertisement distribution system in Fig. 1;

Fig. 3 is a functional block diagram of a portable terminal 14 in Fig. 1;

25 Fig. 4 is a functional block diagram of a distribution management server 12 in Fig. 1;

Fig. 5 is a flow chart showing the

advertisement reception process performed by the distribution management server in Figs. 1 and 4;

Fig. 6 is a flow chart showing the distribution condition update process performed by the distribution management server in Figs. 1 and 4;

Fig. 7 is a flow chart showing the distribution process performed by the distribution management server in Figs. 1 and 4;

Fig. 8 is a view showing an example of the information registered in an advertisement data table 121;

Fig. 9 is a view showing an example of the information registered in a user information table 122;

Fig. 10 is a view showing an example of the information registered in a distribution information table 131; and

Fig. 11 is a sequence chart showing the operation of a conventional advertisement distribution system.

## 20 Description of the Preferred Embodiments

The present invention will be described in detail below with reference to the accompanying drawings.

Fig. 1 shows an advertisement distribution system according to an embodiment of the present invention. The advertisement distribution system shown in Fig. 1 is comprised of an upload terminal 11, distribution management server 12, distribution server

13, and a plurality of portable terminals 14<sub>1</sub> and 14<sub>2</sub>,  
all of which are connected to a communication network 16.  
The upload terminal 11 is installed in a sponsor's  
office, advertising agent, or the like and used to  
5 register advertisement data in an advertisement  
distribution service.

The distribution management server 12 is  
installed in an advertisement distribution center 15 and  
manages user information including advertisement  
10 categories to be distributed to each user who is  
registered to receive distributed advertisements by  
using a user information table 122. The distribution  
management server 12 determines an advertisement to be  
distributed to each user in accordance with the category  
15 included in user information. The distribution server  
13 manages information associated with advertisement  
data registered from the upload terminal 11, e.g.,  
advertisement identification codes for identifying the  
respective advertisement data and the categories of the  
20 advertisements, by using an advertisement data table 121.  
In addition to the advertisement data table 121, the  
user information table 122 is connected to the  
distribution management server 12.

The distribution server 13 is installed in the  
25 advertisement distribution center 15 like the  
distribution management server 12 and stores the  
advertisement data uploaded from the upload terminal 11.

The distribution server 13 distributes advertisement data that suits the preferences of a user to a portable terminal 14 of the user in accordance with an instruction from the distribution management server 12.

5 The distribution management server 12 and distribution server 13 may be integrated into one unit. The portable terminal 14 includes, for example, a portable telephone or PDA (Personal Data Assistant) of the user. The portable terminal 14 receives the advertisement data

10 distributed from the distribution server 13 and displays it. A distribution information table 131 is connected to the distribution server 13.

Fig. 2 shows the flow of services provided by the advertisement distribution system having the above 15 arrangement.

The sponsor creates advertisement data by itself or by requesting an advertising agent, and uploads the created advertisement data from the upload terminal 11 to the advertisement distribution center 15.

20 In the advertisement distribution center 15, the distribution server 13 stores the advertisement data in a database, and the distribution management server 12 registers an advertisement identification code (advertisement ID) for identifying the advertisement

25 data, the category of the advertisement, and the like in the advertisement data table 121 (step S201). In accordance with an instruction from the distribution

management server 12, the advertisement data registered in the distribution server 13 is distributed to the portable terminal of each user whose preference indicated by user information coincides with condition

5 information.

A case wherein advertisement data is distributed to the portable terminal 14<sub>1</sub> will be described below. The portable terminal 14<sub>1</sub> displays the distributed advertisement data on the screen. The user

10 sees the screen and performs operation for deletion because the contents of the advertisement do not suit the preferences of the user. The portable terminal 14<sub>1</sub> then deletes the advertisement data and notifies the advertisement distribution center 15 of the contents of

15 the operation and the like (step S202). This notification contains the advertisement data identification code (advertisement ID), operation content ("deletion" in this case), operation date, and user identification code (user ID).

20 Upon reception of the notification, the distribution management server 12 in the advertisement distribution center 15 updates the user information table 122 in accordance with the notified information (step S203). For example, the distribution management

25 server 12 updates the user information so as not to distribute any advertisements of the same type as the deleted advertisement data to the user from now on.

A case wherein advertisement data is distributed to the portable terminal 14<sub>2</sub> will be described next. The portable terminal 14<sub>2</sub> displays the distributed advertisement data on the screen. The user 5 sees the screen and performs storing (saving) operation because he/she becomes interested in the contents of the advertisement. The portable terminal 14<sub>2</sub> stores the advertisement data and notifies the advertisement distribution center 15 of the contents of the operation 10 and the like (step S204). In this notification, the operation content is "save".

In the advertisement distribution center 15 which has received the notification, the distribution management server 12 updates the user information table 15 122 in accordance with the notified information (step S205). For example, the distribution management server 12 updates the user information to distribute many advertisement data of the same type as the stored advertisement data to the user.

20 In the advertisement distribution system of this embodiment, therefore, the portable terminal 14 notifies the distribution management server 12 of the contents of the operation performed by the user with respect to the notified advertisement data to make the 25 distribution management server 12 reflect the notified contents in the user information, thereby quickly and accurately knowing the advertisement data favored and

wanted by the user of the portable terminal 14. This makes it possible to distribute advertisement data in accordance with the preferences of the user.

Fig. 3 shows the arrangement of the portable terminal 14<sub>1</sub>. The portable terminal 14<sub>2</sub> has the same arrangement. The portable terminal 14<sub>1</sub> is comprised of a communication control section 31, operation information notifying section 32, data processing section 33, operation section 34, window display section 35, and data storage section 36. The communication control section 31 communicates with the distribution management server 12 and distribution server 13 via the communication network 16 through wire or wirelessly. The operation information notifying section 32 notifies the contents of the operation performed by the user with the operation section 34 with respect to advertisement data.

The data processing section 33 temporarily stores distributed advertisement data, analyzes it, and makes the window display section 35 display the resultant information. In addition, the data processing section 33 processes advertisement data in accordance with the user operation recognized by the operation section 34. When the user performs operation for "save" with the operation section 34, the data processing section 33 records the advertisement data on the data storage section 36. The operation section 34 is a user

interface for allowing the user to operate the portable terminal 14, and recognizes the operation performed by the user, e.g., key input operation. The window display section 35 displays distributed advertisement data in a window. The data storage section 36 stores advertisement data and the like.

Fig. 4 shows the arrangement of the distribution management server 12. The distribution management server 12 is comprised of a communication control section 41, data processing section 42, operation notifying/analyzing section 43, advertisement data table 121 lookup section 44, and user information table 122 updating section 45. The communication control section 41 communicates with the distribution management server 12 and distribution server 13 via the communication network 16 though wire or wirelessly. The data processing section 42 temporarily stores the message received from the communication network 16, analyzes it, and identifies the message for notifying operation for advertisement data. In addition, the data processing section 42 temporarily stores the message to be transmitted to another apparatus and transmits it to the communication network 16 through the communication control section 41.

When the data processing section 42 identifies the notification of the operation with respect to the advertisement data from the portable terminal 14, the

operation notifying/analyzing section 43 analyzes the contents of the notification. The operation notifying/analyzing section 43 obtains a category to which the advertisement data belongs from the advertisement data table 121 lookup section 44 on the basis of the advertisement identification code contained in the notification, and collates it with the contents of the user information in the user information table 122. The advertisement data table 121 lookup section 44 looks up the advertisement data table 121 with the advertisement identification code, and acquires a category to which the advertisement data belongs. The user information table 122 updating section 45 updates the user information table 122 in accordance with the collation result obtained by the operation notifying/analyzing section 43.

The operation of the distribution management server 12 will be described next. The operation of the distribution management server 12 includes three main processes, namely an advertisement reception process, a distribution condition update process, and a distribution process.

The advertisement reception process performed by the distribution management server 12 will be described next with reference to the flow chart of Fig. 5. The advertisement reception process is the process of receiving the advertisement data uploaded

from the upload terminal 11 and registering it on the advertisement data table 121. The distribution management server 12 is set in a standby state to be always ready to receive uploaded advertisement data 5 (step S501). In addition to the data of the advertisement text, advertisement data contains information, such as distribution request time, distribution intervals, save expiration date, desired distribution area, sponsor identification information, 10 category, and data attribute. The data of the advertisement text is stored in the distribution server 13.

The distribution request time indicates the date when the sponsor wants to distribute the 15 advertisement. The distribution intervals indicate standard time intervals at which the advertisement is distributed. The save expiration date indicates the duration during which distribution is continued. Any data that has expired is deleted. The category 20 indicates the field to which the advertisement belongs to be distributed in accordance with user's preferences. Examples of the category are "shopping", "eating and drinking", "recreation", and "event". These categories are further classified hierarchically. For example, 25 "shopping" is further classified into categories, e.g., "PC" and "fashion". The data attribute indicates the specific form of the advertisement data. Examples of

the data attribute are electronic mail (MAIL), a Web page image (WEB), and voice information (VOICE).

Upon reception of the advertisement data uploaded from the upload terminal 11, the distribution 5 management server 12 registers information such as the distribution request time, distribution intervals, storage expiration date, desired distribution area, sponsor identification information, category, and data attribute contained in the advertisement on the 10 advertisement data table 121 (step S502). Fig. 8 shows an example of the information registered on the advertisement data table 121.

When registration on the advertisement data table 121 is completed, the distribution management 15 server 12 checks whether all the received advertisement data are processed (step S503). If all the advertisement data are processed, the advertisement reception process is terminated. If any received advertisement data is left unprocessed, the flow returns 20 to step S501 to continue the advertisement reception process.

The distribution condition update process performed by the distribution management server 12 will be described next with reference to the flow chart of 25 Fig. 6. The distribution condition update process is the process of receiving a user operation notification from the portable terminal 14 and updating the user

information table 122.

As shown in Fig. 9, the user information table 122 is comprised of a user ID, terminal attributes, category, and degree. The terminal attributes indicate the functions of the portable terminal. Referring to Fig. 9, the terminal attributes of the terminal of the user with the user ID "07011113333" are "MAIL/WEB/VOICE", and hence the terminal can receive electronic mail, a Web page image, and voice data.

10 The degree is a value representing how much the user is interested in the advertisement belonging to each category, and is calculated upon user operation "save" and "delete". When the user "saves" advertisement data, the degree is incremented by one.

15 When the user "deletes" the advertisement data, the degree is decremented by one. Referring to Fig. 9, for example, with regard to the user with the user ID "07011113333", the degree of "fashion" is "1". If the user saves many advertisement data belonging to this

20 category, the degree increases. A high degree indicates that the user's interest in the advertisement belonging to this category is high.

As shown in Fig. 6, the distribution management server 12 is in a standby state to be always ready to receive a message notifying user operation (step S601). Upon reception of a message notifying user operation, the distribution management server 12 checks

whether the message is a message notifying user operation (step S602). If this message is not a message notifying user operation, the flow returns to step S601 to be set in a standby state to be ready to receive a 5 message.

If the message is a message notifying user operation, the distribution management server 12 searches the advertisement data table 121 with the advertisement ID contained in the message to acquire the 10 category of the advertisement (step S603). If, for example, the advertisement ID is "ab00002" in Fig. 8, the category of the advertisement is "fashion".

It is then checked whether the user operation contained in the message is "save" or "delete" (step 15 S604). If the user operation is "save", the degree of the category corresponding to the advertisement ID contained in the message is incremented by one in the user information corresponding to the user ID contained in the message (step S605). If the user operation is 20 "delete", the corresponding category is decremented by one (step S606).

The distribution process performed by the distribution management server 12 will be described next with reference to the flow chart of Fig. 7. The 25 distribution process is the process of looking up the user information table 122 and advertisement data table 121 to determine advertisement data to be distributed to

each user, and instructing the distribution server 13 to distribute the advertisement data. The distribution management server 12 arranges categories, each exhibiting a degree equal to or more than a 5 predetermined threshold, in descending order of degree for each user by looking up the user information table 122 (step S701).

The distribution management server 12 then extracts advertisement data associated with each of the 10 categories arranged in step S701 by looking up the advertisement data table 121 (step S702). The distribution management server 12 creates, in the distribution server 13, a distribution information table 131 in which the advertisement data extracted in step 15 S702 are arranged in correspondence with the respective categories arranged in step S701 (step S703).

Fig. 10 shows an example of the information registered in the distribution information table 131. In the distribution information table 131, advertisement 20 data associated with categories with high degrees are arranged in descending order of degree for each user. In the distribution information table 131, advertisement data to be distributed in one cycle. In the case shown in Fig. 10, three advertisement data are distributed in 25 one cycle.

The distribution management server 12 then instructs the distribution server 13 to distribute

advertisement data in accordance with the distribution information table 131 (step S704). The distribution management server 12 monitors the completion of the distribution of the advertisement and terminates the 5 distribution process if it is completed (step S705).

The operation of the portable terminal 14 will be described next. The portable terminal 14 performs user registration in the distribution management server 12 to receive the advertisement data distributed from 10 the distribution server 13. All advertisement data are distributed to the user immediately after user registration because no information about the favorite categories of the user is registered in the distribution management server 12. Upon reception of the distributed 15 advertisement data, the user selects necessary advertisement data and unnecessary advertisement data to "save" the necessary data in the portable terminal 14 and "delete" the unnecessary data. For example, advertisement data is displayed as wallpaper on the 20 screen of the portable terminal 14. This advertisement can be reduced and displayed by changing the settings of the portable terminal 14.

When the user performs operation such as "delete" or "save", the portable terminal 14 transmits a 25 message notifying the user operation to the distribution management server 12. This message contains the advertisement ID for which the operation has been

performed, the contents of the user operation ("delete" or "save"), the operation date, and the user ID. User operation for one advertisement may be transmitted as one message or a set of user operations for a plurality 5 of advertisement data may be transmitted as one message.

In this embodiment, when the user operates the portable terminal to delete or save the advertisement data distributed from the advertisement distribution center, the portable terminal notifies the advertisement 10 distribution center of the corresponding operation data. The advertisement distribution center sets a condition for the subsequent distribution of advertisement data to the user in accordance with the presence/absence of notification of operation data corresponding to the 15 immediately preceding advertisement data.

The above embodiment has exemplified the system for distributing advertisement data to the portable terminal 14. However, the data to be distributed are not limited to advertisement data. The 20 present invention can be applied to various data to be preferably distributed to users in accordance with user's preferences. In addition, the device at a distribution destination is not limited to a portable terminal. The present invention can be applied to any 25 device that can be connected to a communication network, e.g., personal computers.

An advertisement distribution system according

to another embodiment of the present invention will be described next.

In this embodiment, in distributing advertisement data to a portable terminal 14, a distribution management server 12 receives a response from the portable terminal 14 first, and then distributes the next advertisement data. Upon distributing advertisement data to the specific portable terminal 14, a distribution server 13 does not 10 distribute the next advertisement data to the portable terminal 14 until it receives a message notifying user operation for the advertisement data from the portable terminal 14.

According to this embodiment, since no next 15 advertisement data is transmitted unless the user performs operation "save" or "delete", no distributed advertisement data is overwritten by the next advertisement data before the distributed advertisement data is "saved" or "deleted".

As has been described above, according to the present invention, the terminal of each user notifies the distribution center of user operation for distributed data, and data to be distributed to each user are selected on the basis of the preferences of 25 each user which are acquired from the contents of each notification in the distribution center. Therefore, selected data that accurately reflect the user's

preferences can be quickly distributed to the respective users.